APPENDIX B

Description of riparian vegetation community types (Anderson and Ohmart, 1984).

COMMUNITY	CRITERIA
Cottonwood-Willow (CW)	Salix gooddingii and Populus fremontii (the latter in extremely low densities) constituting at least 10% of total trees.
Salt cedar (SC)	Tamarix chinensis constituting 80-100% of total trees.
Salt cedar - Honey mesquite (SH)	Prosopis glandulosa constituting at least 10% of total trees; rarely found to constituting greater than 40% of total trees.
Salt cedar - Screwbean mesquite (SM)	Prosopis pubescens constituting at least 20% of total trees.
Honey Mesquite (HM)	Prosopis glandulosa constituting 90-100% of total trees.
Arrowweed (AW)	Tessaria sericea constituting 90-100% of total vegetation in area.
Atriplex (ATX)	Atriplex lentiformis, A. canescens and/or A. polycarpa constituting 90-100% of total vegetation in area.
Marsh (MA)	Predominately cattail/bulrush (Typha/Scrirpus) and carrizo (Phragmites).
Creosote (CR)	Larrea Divaricata constituting 90-100% of total vegetation in area.

Description of vegetation structure types (Anderson and Ohmart, 1984).

STRUCTURE TYPE	CRITERIA
I	45% of stand in overstory (>15 ft); 30% in intermediate story (2-15 ft); 10% in understory (<2 ft).
II	60% of stand in overstory (>15 ft); 30% in intermediate story (2-15 ft); 10% in understory (<2 ft).
III	25% of stand in overstory (>15 ft); 50% in intermediate story (2-15 ft); 25% in understory (<2 ft).
IV	15% of stand in overstory (>15 ft); 45% in intermediate story (2-15 ft); 40% in understory (<2 ft).
V	5% of stand in overstory (>15 ft); 35% in intermediate story (2-15 ft); 60% in understory (<2 ft).
VI	<5% of stand in overstory (>15 ft); 20% in intermediate story; >75% of stand in understory (<2 ft).

Description of marsh types (Anderson and Ohmart, 1984).

MARSH TYPE	CRITERIA
1	Nearly 100% cattail/bulbrush, small amounts of phragmites and open water.
2	Nearly 75% cattail/bulbrush, many trees and grasses interspersed.
3	About 25-50% cattail/bulbrush, some phragmites, open water; some trees and grass.
4	About 35-50% cattail/bulbrush, many trees and grasses interspersed.
5	About 50-75% cattail/bulbrush, few trees and grasses interspersed.
6	Nearly 100% phragmites, little open water.
7	Open marsh (75% water), adjacent to sparse marsh vegetation; includes sandbars and mudflats when Colorado River is low.

WORKING DRAFT

RANGEWIDE ASSESSMENT OF HABITAT ACQUISITION PRIORITIES FOR THE SOUTHWESTERN WILLOW FLYCATCHER

Interim Report-December 1, 1998

Prepared by:
THE NATURE CONSERVANCY, ARIZONA CHAPTER
CHRIS FICHTEL and ROBERT MARSHALL

Submitted to:

U.S. BUREAU OF RECLAMATION
BOULDER CITY, NEVADA

WORKING DRAFT

River: San Pedro

State/County: AZ/Pinal

Parcel Name: SPR 06

Landowner Information**:** ASARCO
P.O. Box 98
Hayden, AZ 85235

Parcel Number: 300-19-001

Acreage: 53 acres

USGS Topo: Winkleman, AZ (1972), Dudleyville (1972)

T/R/S Description: T6S R16E Sec6

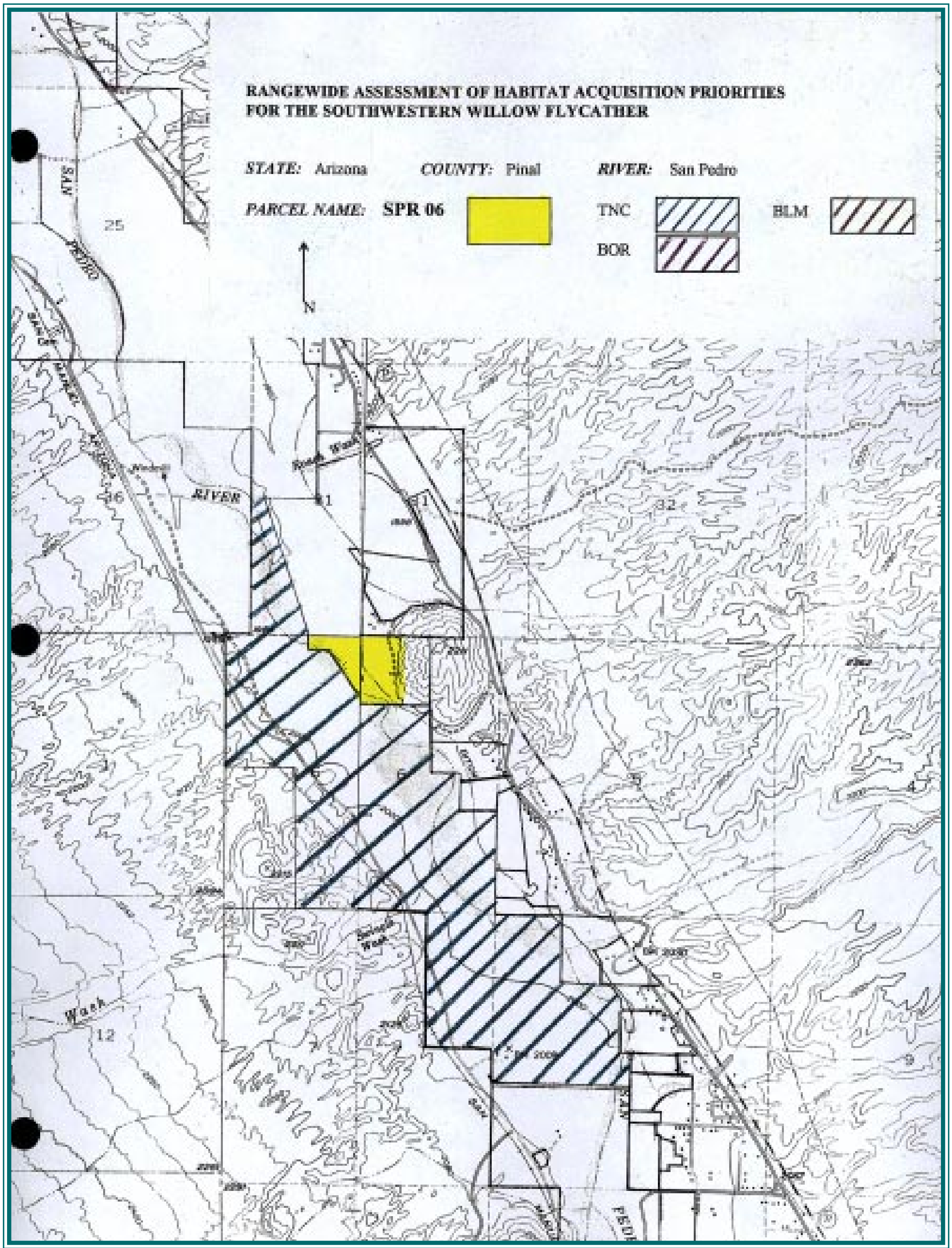
SWWF Breeding Status: No documented nesting on this parcel.

Habitat Description: Mixed native/exotic vegetation [cottonwood-willow-saltcedar] in the active floodplain. Tall gallery forest of cottonwood are interspersed with open sandy areas and open dense stands of young willow, saltcedar, and cottonwood. The functional integrity throughout most of this reach appears intact as evidenced by the positive response of vegetation and changes in channel morphology since heavy flooding in 1993. The river from Mammoth to the confluence with the Gila River is classified as an intermittent stream, although over the past decade most of this reach appears to be perennial (TNC 1998).

Other Significant Biological Elements: Cottonwood-willow riparian community. palustrine wetlands, floodplain terrace mesquite-sacaton community, bald eagle, native fish and amphibian communities.

Estimation Of Parcel Value: Based on recent comparable sales of properties along the lower San Pedro River and conversations with TNC Protection staff working in this area, a range of $1,125 - $2,300 per acre is expected. Estimated total cost is $59,625 to $121,900.

Proximity of Parcel to Public/Private Conservation Lands: Property borders land owned by TNC's San Pedro River Preserve, which is managed to restore and protect habitat for the SWWF.


RANGEWIDE ASSESSMENT OF HABITAT ACQUISITION PRIORITIES
FOR THE SOUTHWESTERN WILLOW FLYCATHER
STATE: Arizona
COUNTY: Pinal
RIVER: San Pedro
PARCEL NAME: SPR 06
TNC
BLM
BOR
N
SAN PEDRO
RIVER
25
36
31
32
12
Wash

United States Department of the Interior

Bureau of Reclamation
Lower Colorado Regional Office
P.O. Box 61470
Boulder City, NV 89006-1470

WORKING DRAFT

Mr. Stuart Leon
US Fish and Wildlife Service
Region 2
PO Box 1306
Albuquerque, NM 87103-1306

Dear Mr. Leon:

On April 30, 1997, the U.S. Fish and Wildlife Service (Service) issued a Biological and Conference Opinion on the U.S. Bureau of Reclamation's (Reclamation) routine operations and maintenance of the Lower Colorado River (LCR) from Lake Mead to the Southerly International Boundary between the United States and Mexico (USFWS, 1997). In this opinion, the Service stated that Reclamation's proposed action for operation and maintenance of facilities on the LCR is likely to jeopardize the continued existence of the bonytail chub *(Gila elegans)*, the razorback sucker *(Xyrauchen texanus)*, and the southwestern willow flycatcher *(Empidonax traillii extimus)*. A Reasonable and Prudent Alternative (RPA) was developed, during formal consultation, which includes both short and long-term provisions that will improve baseline conditions so that the status of these three species will improve to a point below jeopardy threshold in the long-term. Concurrently, a Multi-Species Conservation Planning effort (MSCP), comprised of federal, state, and private organizations, has been initiated with the goal of producing a plan, by the year 2000, for the conservation of over 100 species along the LCR over the next fifty years.

One of the long-term provisions of the RPA (RPA#11) deals with the compensation of historical southwestern willow flycatcher habitat lost and not restorable due to Reclamation's activities. This provision is included as an attachment. The first logical step in determining the amount of willow flycatcher habitat needed to be restored or protected range-wide to compensate for lost habitat along the LCR is to estimate the range, in acres, of willow flycatcher habitat present prior to the construction of Hoover Dam in 1936. The following is an outline of proposed sources and methods which will be used in an attempt to determine this estimate of willow flycatcher habitat present historically.

SOURCES

1) Explorers journals: Europeans, mainly Spanish priests and military units, explored the LCR during the 1700 and early 1800's. In 1848, the United States and Mexico signed a treaty ceding most of the current southwestern US to the United States. Exploration, chiefly by the US military, soon followed. Several of these explorers left journals including Derby (1852), Sitgreaves (1853), White (1858), Ives (1861), Johnson (1869), Adams (1871), Berton (1878), Stanton (1890), Flavell (1896), Agassiz Hall trip (1902), and Dellenbaugh (1909). Many of these journals mention vegetation types, however, often times these explorers only saw the river from a boat and, thus, have a rather different view of the floodplain ecosystem than what may have actually been present. Some of the later works have photos which vary in usefulness. Also, many explorers did not differentiate between cottonwood, willow, and mesquite.

2) Photo collections: The libraries at the University of Arizona, Arizona State University, University of Nevada at Las Vegas, the Arizona Historical Society in Tucson, and the Arizona Historical Foundation in Tempe have photo collections that contain at least a few old pre-dam era photos of the LCR.

3) Historical maps: Several historical maps of portions of the LCR have been uncovered at the above sites including a map of the Olive Lake area near Blythe (1920), a map of the Bard area (1900?), and George Wheeler's map of Fort Mohave (1870). The Olive Lake map is of particular interest as it has the 1856 west bank of the river, the 1920 river, and the 1915 timber line delineated. The other two maps lump cottonwoods, willows, and mesquites together but may be usable in conjunction with any old photos or journal descriptions.

4) Aerial photos: Reclamation has a set of 1930 aerial photos of the Parker-Palo Verde Valley. There are also remnants of a 1938 flight which covered almost the entire river from Boulder Canyon to Yuma, with the exception of Chemehuevi Valley. The photos are at a scale of 1:20000 which is good enough to differentiate between general habitat types.

5) River flow data: Data is available from USGS, Reclamation, and Minckley (1997 unpublished) that can be used to show how dynamic the ecosystem was historically. We may be able to correlate some of the flow data with the photos, maps, journals, and aerial photos.

PROPOSED METHODS

Although all of the above sources will, to some degree, assist in determining an estimate of historical willow flycatcher habitat along the LCR, most sources are subjective and/or anecdotal. In an effort to quantify this estimate, Reclamation proposes to rely primarily on the sets of aerial photographs, circa 1930 and 1938. In doing so, the following assumptions will be made:

1) Historical flows were highly dynamic and the composition and extent of habitat types varied greatly through time, i.e. annually, by decade, by century, etc.

2) Construction of Hoover Dam did not have a significant influence on the extent or composition of downstream habitat by 1938.

3) The 1930 and 1938 aerial photos represent a "typical" or baseline description of the extent and composition of historical habitat.

Given these assumptions, major habitat types will be delineated by stereoscopic interpretation of these aerial photos for the entire reach from Mexico to Hoover Dam, where applicable. A subjective, but liberal, interpretation of willow flycatcher habitat will be determined from this type map. A range of willow flycatcher habitat acreage would then be determined from this baseline figure by correlating and interpreting the affects of extreme flow perturbations reflected from the historical river flow hydrographs (source no. 5 above).

Mr. Leon, could you please distribute this letter to the Southwestern Willow Flycatcher Recovery Team for review and have Team members provide comments to Mr. John Swett by May 31, 1998, if possible. If you have any questions, please call Mr. Swett at 702-293-8574.

Sincerely,
Michael T. Walker, Manager
Natural Resources Group

Enclosure 2001 Daily WBR: JSwett:1b:4/2/98:293-8574 (COM2300:RPA11LEO.JS)